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Case Image
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Acute Myocardial Infarction and Accompanying Woven Coronary Anomaly

Osman Kayapinar, Adnan Kaya, Gulsah Akture, Ahmet Egemen Sayin and Esra Koc*

Department of Cardiology, Duzce University, Duzce, Turkey

Abstract

Woven coronary artery anomaly (WCAA), division of epicardial coronary artery into many long and thin channels twisting along the vessel axis course after a few centimeters to merge to form the main lumen again is a rare disorder that is not illuminated yet. Here by presenting this case of left anterior descending (LAD) artery WCAA which is incidentally diagnosed in a patient with inferior ST segment elevation myocardial infarction and causing reversible ischemia in anterior and anterior septum; would like to remind the interventional cardiologist this entity one more time.

Introduction

Woven coronary artery anomaly (WCAA), has not been explained satisfying etiology and phatophysiolgy yet, is an extremely rare (23 published cases in literature up to date) congenital anomaly [1]. A part of epicardial coronary artery divides into many long and thin channels and after a few centimeters twisting along the vessel axis course these channels merge to form the main lumen again [2]. It is believed to be a benign condition and the majority of cases are detected incidentally during coronary angiographies [3]. However, there are cases of WCAA that associated with atherosclerosis [4], myocardial infarction [5,6], and chronic ischemia [7]. Here we would like to present a case of left anterior descending (LAD) artery WCAA which is incidentally diagnosed in a patient with inferior ST segment elevation myocardial infarction and causing reversible ischemia in anterior and anterior septum.

Case Presentation

A 36-year-old male presented to our emergency room with a crushing substernal chest pain. The vital signs of the patient were within normal limits (a blood pressure of 110/56 mmHg, a respiratory rate of 12 per minute, a heart rate of 79 bpm and a temperature of 37°C). Initial electrocardiography showed Q wave with ST segment elevation in DII, DIII and AVF with sinus rhythm. He has any risk factors apart from smoking. Acetylsalicylic acid 300 mg sublingual, clopidogrel 600 mg per oral and heparin 80 U/kg subcutaneous were administered. Coronary angiography (CAG) showed occlusion of right coronary artery (RCA) at the middle segment with heavy thrombus burden (Figure 1) and contrast filling defect of LAD from ostium to mid segment (Figure 2 and Video 1). Percutaneous coronary intervention was performed with multiple balloon predilatations and intracoronary absiksimab was administered for RCA. Chest pain resolution was achieved with

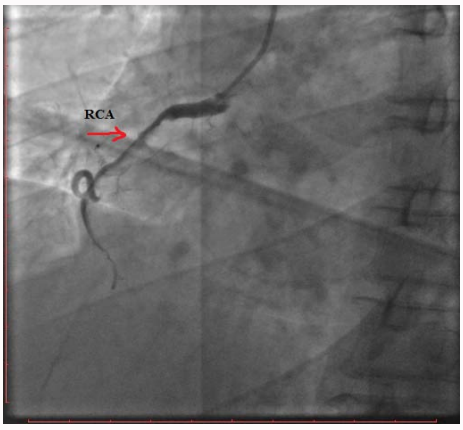

Figure 1: Coronary angiography showing occlusion of RCA at the middle segment with heavy thrombus burden.

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Correspondence:
Adnan Kaya, Department of Cardiology, Duzce University, Ciftepinarlar Mahallesi, 39. Sokak. No: 4/1, Konuralp, Duzce, Turkey, Tel: 905324009765;
E-mail: adnankaya@ymail.com

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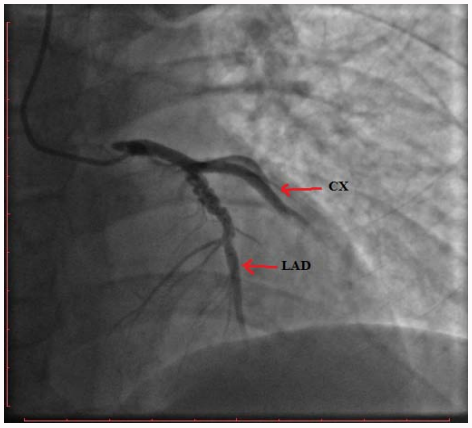


Figure 2: Coronary angiography showing contrast filling defect of LAD from ostium to mid segment.

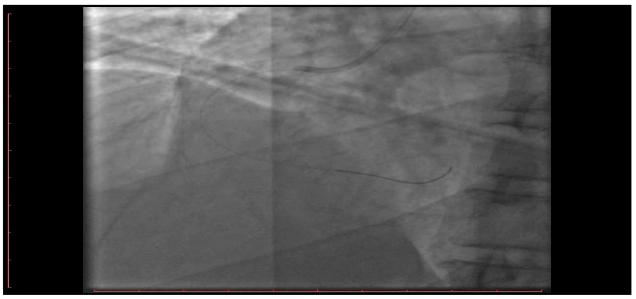
Video 1: Coronary angiography showing contrast filling defect of LAD from ostium to mid segment.

thrombolysis in myocardial infarction (TIMI) 1 distal blood flow in RCA (Video 2). Spontaneous coronary artery dissection was our first impression for LAD but it gave place to WCAA after multiple views. LAD showed decreased distal contrast washout with distal TIMI 2 blood flow. Echocardiography showed decreased ejection fraction to 50% with inferior hypokinesis. Myocardial perfusion imaging showed fixed perfusion defect and reversible ischemia in inferior and posterior walls and reversible ischemia in anterior and anterior septum. After these findings coronary artery bypass surgery was advised for revascularization and the patient subsequently underwent this operation. After operation he is in good health condition.

Discussion

First described by Sane and Vidaillet [2], WCAA is an extremely rare coronary anomaly. Clinic implications of the anomaly varies from myocardial infarction to death but the disease is generally taught to be benign. Twenty three cases of the anomaly is published up to date. Men are affected more than women (M:F, 10:1), RCA is affected more than the other coronary arteries (RCA: 54.5%, LAD: 13.6% , CX: 9.1%). Two or three vessel anomaly is also possible in the same patient [8].

Most of the published case were incidentally diagnosed with WCAA. It is possible that coronary artery flow is enough to demonstrate normal cardiac reserve during stress test in the majority of the patients with WCAA. But thin and twirling channels may lead to thrombus formation and myocardial infarction [9]. Tasal et al. [4] suggested increased atherosclerosis in WCAA due to decreased blood flow and increased shear stress. Ischemic WCAA supplied areas on



Video 2: Coronary angiography showing distal TIMI-1 blood flow of RCA after percutaneous coronary intervention with multiple balloon predilatations and intracoronary tirofiban.

stress testing could be explained with lower reserve due to decreased luminal cross section of the vessel [10].

Like most of the WCAA cases our case was also incidentally diagnosed. The patient undergone coronary angiography due to STEMI, while being diagnosed with LAD WCAA. On the stress test it is showed up that the WCAA causes ischemia in LAD territory. As a consequence of ischemia in both LAD and RCA areas the patient is advised to coronary artery bypass surgery. After operation he is in good health condition.

We would like to remind WCAA one more time to our interventional cardiologist fellows to not to confuse this entity with dissection, thrombus, bridging collaterals which could lead further complicated intervention in the absence of documented ischemia.

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